1. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = 15$ and choose the interval that $f^-1(15)$ belongs to.

$$f(x) = \sqrt[3]{3x - 4}$$

A. $f^{-1}(15) \in [-1128.5, -1124.2]$

B. $f^{-1}(15) \in [1124.3, 1128.9]$

C. $f^{-1}(15) \in [-1124.2, -1120.8]$

D. $f^{-1}(15) \in [1121.9, 1125.8]$

E. The function is not invertible for all Real numbers.

---

2. Find the inverse of the function below. Then, evaluate the inverse at $x = 7$ and choose the interval that $f^-1(7)$ belongs to.

$$f(x) = e^{x+5} - 3$$

A. $f^{-1}(7) \in [-2.55, -2.18]$

B. $f^{-1}(7) \in [-1.84, -0.93]$

C. $f^{-1}(7) \in [-3.14, -2.59]$

D. $f^{-1}(7) \in [6.87, 7.36]$

E. $f^{-1}(7) \in [-0.62, -0.27]$

---

3. Find the inverse of the function below. Then, evaluate the inverse at $x = 7$ and choose the interval that $f^-1(7)$ belongs to.

$$f(x) = e^{x-5} + 3$$

A. $f^{-1}(7) \in [5.43, 5.54]$

B. $f^{-1}(7) \in [5.12, 5.31]$

C. $f^{-1}(7) \in [6.27, 6.45]$

D. $f^{-1}(7) \in [3.54, 3.82]$

E. $f^{-1}(7) \in [-3.62, -3.52]$

4. Multiply the following functions, then choose the domain of the resulting function from the list below.

$$f(x) = 6x^4 + 4x^2 + 7x + 3 \text{ and } g(x) = \sqrt{-6x - 27}$$

A. The domain is all Real numbers except $x = a$, where $a \in [6.25, 9.25]$

B. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [3.5, 10.5]$

C. The domain is all Real numbers less than or equal to $x = a$, where $a \in [-12.5, -1.5]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [1.4, 5.4]$ and $b \in [1.25, 7.25]$

E. The domain is all Real numbers.

5. Determine whether the function below is 1-1.

$$f(x) = 18x^2 - 42x - 196$$

A. No, because there is a y-value that goes to 2 different x-values.

B. No, because the range of the function is not $(-\infty, \infty)$.

C. Yes, the function is 1-1.

D. No, because the domain of the function is not $(-\infty, \infty)$.

E. No, because there is an x-value that goes to 2 different y-values.

6. Choose the interval below that f composed with g at $x = -1$ is in.

$$f(x) = 3x^3 + 2x^2 - 4x - 4 \text{ and } g(x) = 3x^3 + x^2 + 2x + 3$$

A. $(f \circ g)(-1) \in [1.9, 4.3]$

B. $(f \circ g)(-1) \in [-2.4, 0.1]$

C. $(f \circ g)(-1) \in [-2.4, 0.1]$

D. $(f \circ g)(-1) \in [5.6, 7.5]$

E. It is not possible to compose the two functions.

---

7. Find the inverse of the function below (if it exists). Then, evaluate the inverse at $x = 12$ and choose the interval that $f^-1(12)$ belongs to.

$$f(x) = \sqrt[3]{5x + 2}$$

A. $f^{-1}(12) \in [-345.36, -344.52]$

B. $f^{-1}(12) \in [345.63, 346.11]$

C. $f^{-1}(12) \in [-346.21, -345.48]$

D. $f^{-1}(12) \in [344.56, 345.27]$

E. The function is not invertible for all Real numbers.

---

8. Choose the interval below that f composed with g at $x = -1$ is in.

$$f(x) = x^3 - 1x^2 - 2x \text{ and } g(x) = -3x^3 + 3x^2 - x - 2$$

A. $(f \circ g)(-1) \in [89, 92]$

B. $(f \circ g)(-1) \in [-13, -8]$

C. $(f \circ g)(-1) \in [81, 89]$

D. $(f \circ g)(-1) \in [-2, 0]$

E. It is not possible to compose the two functions.

---

9. Subtract the following functions, then choose the domain of the resulting function from the list below.

$$f(x) = \frac{3}{4x - 23} \text{ and } g(x) = \frac{2}{4x - 29}$$

A. The domain is all Real numbers except $x = a$, where $a \in [6.67, 12.67]$

B. The domain is all Real numbers greater than or equal to $x = a$, where $a \in [-12, 1]$

C. The domain is all Real numbers less than or equal to $x = a$, where $a \in [0.4, 5.4]$

D. The domain is all Real numbers except $x = a$ and $x = b$, where $a \in [-2.25, 7.75]$ and $b \in [6.25, 10.25]$

E. The domain is all Real numbers.

---

10. Determine whether the function below is 1-1.

$$f(x) = 18x^2 + 15x - 375$$

A. No, because the domain of the function is not $(-\infty, \infty)$.

B. No, because there is an x-value that goes to 2 different y-values.

C. No, because there is a y-value that goes to 2 different x-values.

D. Yes, the function is 1-1.

E. No, because the range of the function is not $(-\infty, \infty)$.
